

WE CLAIM:

1. Electrical structural part, comprising an electrical or electronic structural element, a basic body (3, 21), consisting of a hard thermoplastic synthetic material, on which the structural element is arranged, and an encapsulation (20, 38) tightly surrounding the structural element, consisting of a second hard thermoplastic synthetic material the melting temperature of which is higher than the melting temperature of the basic body (3, 21) and the material structure of which is intimately fused with the material structure of the basic body (3, 21), wherein the structural element is embedded free of gaps and voids.
2. Structural part according to the preceding claim, characterized in that the structural element is an electrical coil winding (13, 31), the coil wire (14, 32) of which is arranged directly on the basic body (3, 21).
3. Structural part according to one of the preceding claims, characterized in that the basic body (3, 21) has a cylindrical portion (5, 22) carrying the coil winding (13, 31).
4. Structural part according to one of the preceding claims, characterized in that the cylindrical portion (5, 22) of the basic body (3, 21) at one end area has a limitation collar (6, 24) and at the opposite other end area has a connection head (7, 25).
5. Structural part according to one of the preceding claims, characterized in that the basic body (3, 21) has at least one protruding rib (8, 9, 26, 27) and at least one undercut (10, 11, 28, 29) into which the synthetic material of the encapsulation (20, 38) engages.
6. Structural part according to one of the preceding claims, characterized in that the ribs (8, 9, 26, 27) and the undercuts (10, 11, 28, 29) are provided at the cylindrical part (5, 22) of the basic body (3, 21) near the limitation collar (6, 24) and near the connection head (7, 25).

7. Structural part according to one of the preceding claims, characterized in that the ribs (8, 9, 26, 27) have at least one relief (12, 30).

8. Structural part according to one of the preceding claims, characterized in that the connection head (7, 25) of the basic body (3, 21) has at least one, preferably four passages (18, 36) into each of which a connection pin (15, 33) contacted with an end of the coil wire (14, 32) is embedded free of voids.

9. Structural part according to one of the preceding claims, characterized in that an end portion of the connection pin (15, 33) extends beyond the connection head (7, 25) at a front side (19, 37) opposite to the cylindrical portion (5, 22).

10. Structural part according to one of the preceding claims, characterized in that the coil winding (13, 31) has a main winding (16, 34) and an auxiliary winding (17, 35).

11. Structural part according to one of the preceding claims, characterized in that the main winding (16, 34) is wound onto the cylindrical portion (5, 22) of the basic body (3, 21) and the auxiliary winding (17, 35) is wound onto the main winding (16, 34).

12. Structural part according to one of the preceding claims, characterized in that the coil wire (14, 32) of the main winding (16, 34) comprises two layers wound above each other and the auxiliary winding (17, 35) comprises one single winding layer.

13. Structural part according to one of the preceding claims, characterized in that the basic body (3, 21) has an axial longitudinal bore (4, 23).

14. Structural part according to one of the preceding claims, characterized in that the encapsulation (20, 38) has a circular-cylindrical outer surface.

15. Structural part according to one of the preceding claims, characterized in that it is formed as a plug pin (1) and/or a plug socket (2), with the basic body (3, 21)

having the longitudinal bore (4, 23), the void-free embedded coil winding (13, 31) with the associated connection pins (15) and the encapsulation (20, 38) intimately fused with the basic body (3, 21).

16. Structural part according to one of the preceding claims, characterized in that the plug pin (1) is axially insertable into the plug socket (2).

17. Structural part according to one of the preceding claims, characterized in that the diameter of the circular-cylindrical encapsulation (20) of the plug pin (1) is only somewhat smaller than the inner diameter of the longitudinal bore (23) provided in the basic body (21) of the plug socket (2).

18. Structural part according to one of the preceding claims, characterized in that the connection head (7) of the plug pin (1) has a diameter greater than its coil encapsulation (20) and substantially equal to the diameter of the coil encapsulation (38) of the plug socket (2).

19. Structural part according to one of the preceding claims, characterized in that the coil encapsulation (20) of the plug pin (1) and the coil encapsulation (38) of the plug socket (2) have substantially equal axial lengths.

20. Method for manufacturing an electrical structural part according to one of the preceding claims, characterized in that the basic body (3, 21) is formed in a form tool of an injection molding machine from a thermoplastic synthetic material which after the injection process solidifies to a hard synthetic material, that the electrical or electronic structural element is placed onto the hard basic body (3, 21), that the basic body (3, 21) with the structural element is placed into another form tool of the injection molding machine and is molded around with another thermoplastic synthetic material, the melting temperature of which is higher than the melting temperature of the material of the basic body, free of gaps and voids such that the synthetic material of the basic body (3, 21) is melted by the heat energy of the higher melting synthetic material, whereby the synthetic

materials having differing melting temperatures are intimately fused with each other, and that the higher melting synthetic material after the injection process solidifies to a hard synthetic material encapsulation (20, 38).